NATIONAL CENTERS OF EXCELLENCE IN WOMEN'S HEALTH

Infertility and Innovations in Reproductive Health Technologies

September 2001

OFFICE ON WOMEN'S HEALTH
U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

The National Centers of Excellence in Women's Health (CoEs) were established in 1996 by the Public Health Service's Office on Women's Health within the U.S. Department of Health and Human Services. Their mandate is to establish and evaluate a new model health care system that unites women's health research, medical training, clinical care, public health education, community outreach, and the promotion of women in academic medicine. Their goal is to improve the health status of diverse women across the life span.

Although overall age-specific infertility rates have remained stable as measured by surveys, such as the National Survey of Family Growth (NSFG), the number of visits for infertility-related services has skyrocketed. This increased demand is due primarily to the aging of the general population and to the delay of childbearing for economic or professional reasons by a growing number of women.

With delayed childbearing being the norm for many groups of American women, infertility and infertility treatment have become critical issues in reproductive health. In 1995, 1 in 10 U.S. women of reproductive age had a fecundity impairment, and an additional 3 percent were sterile for reasons other than contraceptive sterilization. About 15 percent of women had received some kind of infertility service, with the proportions sharply higher among high-income women than low-income women.[1]

This pamphlet highlights some of the innovative activities and programs at the CoEs that address infertility and reproductive health technologies.

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[1] ***From Cells to Selves: Reproductive Health for the 21st Century***, National Institute of Child Health and Human Development, 2001.

Clinical Services

- ***Boston University CoE***

  Patients from the BU CoE Women's Health Group receive comprehensive ob/gyn services at Boston University Medical Center (BMC) Women's Center in Obstetrics and Gynecology. The Center specifically meets the special health and psychosocial needs of indigent, homeless, and underserved, minority women. Infertility care for patients is provided through Robert M. Weiss, MD, Director, Infertility and Reproductive Endocrinology, Division of Obstetrics and Gynecology.

  The affiliated Boston Veterans Administration Health System Women's Health Services has continued to expand and address the needs of veteran women during the restructuring of the Boston Veterans Administration Health Systems. The VA Boston Healthcare System was formed in 2000 from a merger of the Boston Veterans Administration Medical Center and the West Roxbury Veterans Administration Medical Center. A Women's Health Council was formed to coordinate the merger of the women's health services. The Council has begun development of maternity and infertility policies for use across the Veterans Administration Integrated Service Network. Margaret Seaver, MD is Medical Director of the Women Veterans Health Center at the VA Boston Healthcare System, and also serves as a Co-Director for the BU CoE.

- University of California, Los Angeles CoE

  The UCLA CoE Infertility Service is comprised of four board certified reproductive endocrinologists, including skilled reproductive surgeons. Three fellows train in the unit. The UCLA CoE Infertility Service sees 10-15 new patients weekly,

and diagnoses and treats multiple causes of infertility, including polycystic ovarian disease and endometriosis, among others. The UCLA CoE Infertility Service performs 225 IVF procedures annually. The CoE also provides infertility consultation and services to underserved women at county and community clinics located throughout Los Angeles.

✦ University of California, San Francisco CoE

The UCSF CoE Model of Care, the Core Primary Care/Ob-Gyn Practices at UCSF Women's Health/Parnassus special services include in-vitro fertilization and reproductive endocrinology. Services provided include:

— General Infertility Evaluation and Treatment
— In Vitro Fertilization (IVF)
— Intracytoplasmic Sperm Injection (ICSI)
— Male Infertility Evaluation and Treatment
— Ovum Donor Program
— Preimplantation Genetic Diagnosis (PGD)
— Donor Sperm Insemination
— Embryo and Semen Cryopreservation
— Gestational Surrogacy
— Male Reproductive Laboratory
— Tubal Ligation Reversals
— Patient Education Sessions and Newsletters

The WomenCare Mental Health Clinic provides services by a multidisciplinary staff. One specific area of expertise includes the interface between mental health and reproductive issues, such as infertility.

- Harvard Medical School CoE

The HMS CoE hospitals provide reproductive endocrinology and infertility services for a wide variety of reproductive problems, including the diagnosis and treatment of infertility, recurrent miscarriage, congenital and hormonal abnormalities related to reproductive function, and the abnormal absence of menstrual periods. In addition to medical and surgical care, providers are dedicated to offering emotional support, counseling, and education about reproductive issues.

Boston IVF, affiliate of Beth Israel Deaconess Medical Center, provides patients with advanced reproductive medical treatment available in combination with individualized care. Established in 1986, Boston IVF has earned a national reputation as one of the most successful advanced fertility treatment facilities in the United States. Their unmatched commitment to scientific and clinical research has resulted in a number of significant “firsts” in New England, including the first deliveries for gamete intrafallopian transfer, embryo cryopreservation, donor oocyte, and the first baby born from intracytoplasmic sperm injection. As part of the guiding belief that the most technologically advanced methods must be offered in conjunction with the most accessible, personal and complete patient care, they also have mental health professionals available who offer emotional and psychological support through private consultations or group meetings. Dr. Kim Thornton, member of the HMS CoE Research Committee, is one of the medical specialists practicing at this site.

Services at the Mary Horrigan Connors Center for Women’s Health include an assisted reproduction laboratory for in-vitro fertilization and other infertility treatments.

Projected for 2003, the Women's Health Space at Massachusetts General Hospital will include reproductive endocrinology and infertility services.

The Divisions of Psychiatry at the HMS CoE include providers with special expertise in psychiatric issues related to women's health throughout the lifespan. Among the spectrum of services included are: fetal and perinatal loss and bereavement; fertility and endocrine-related psychiatric disorders; and depression and infertility. In addition the CoE affiliated hospitals offer social workers who specialize in women's health to provide individual counseling and emotional support to women and their families.

- University of Illinois at Chicago CoE

  In conjunction with the Center for Women's Health, the Department of Obstetrics and Gynecology offers all aspects of assisted reproductive technology (ART), including in vitro fertilization. Infertility patients can take advantage of the newest reproductive technologies in the Outpatient Care Center. The program offers an individualized approach to each couple and tries to minimize the stress associated with infertility treatment. Patients with a panoply of diagnoses including tubal disease, endometriosis, severe male factor, and unexplained infertility have been able to conceive with ART.

- Magee-Womens Hospital CoE

  Sarah L. Berga, MD, professor of obstetrics, gynecology and reproductive sciences and psychiatry at the University of Pittsburgh School of Medicine and member of the CoE Research Team, is the director of the Division of Reproductive Endocrinology and Infertility (REI). University of Pittsburgh Physicians and Magee-Womens Hospital equally fund the

division. Patients with a full range of reproductive endocrine conditions, namely, anovulation, polycystic ovary syndrome, gonadal dysgenesis in adult women, male and female infertility, perimenopause, and menopause are treated. The Division offers a full range of infertility services, including ovulation induction, intrauterine insemination, and assisted reproduction technologies (ART). The program, which is staffed by four of the six faculties, performs conventional in vitro fertilization and embryo transfer, intracytoplasmic sperm injection, testicular recovery of sperm, and donor gametes. In collaboration with other departments, the Division offers a number of specialized services, including the Center for Complex Menopause Care and Adolescent Reproductive Endocrinology.

At the present time, the Division of REI maintains two practice locations. The ART program is primarily located in Monroeville, which is about 13 miles from Magee-Womens Hospital. The main clinical office is located on the 4th floor of Magee-Womens Hospital. The division has grown in the last year with the addition of three new physicians. As of January 2002, the Division will be housed in an entirely new, state-of-the-art facility, which will locate on the fifth floor of Magee-Womens Hospital.

✦ MCP Hahnemann University CoE

The Department of Obstetrics and Gynecology is a partner of the Institute of Women's Health/Center of Excellence. Through the Division of Reproductive Endocrinology and Infertility, Shahab S. Minassian, M.D., director, offers patients the most current techniques in assisted reproduction, including in vitro fertilization and micromanipulation. Dr. Minassian proudly began a collaborative project with Katherine Sherif, M.D. of the Centers for Women's Health this year with the opening of the

Center for PCOS at MCP Hahnemann, the nation's only multidisciplinary center for the treatment of Polycystic Ovarian Syndrome. With the recent addition of new chair/maternal-fetal specialist and geneticist Mark I. Evans, M.D. and vice chair/ director of maternal-fetal medicine Ronald Wapner, M.D., the department has now assembled the world's largest experience in chorion villus sampling and management of complicated multifetal pregnancies, in addition to the most advanced care of the high risk pregnant patient. The Center for Genetics and Fetal Medicine, houses both programs.

- University of Michigan Health System CoE

  The Division of Reproductive Endocrinology of the Department of Obstetrics and Gynecology maintains a comprehensive program of reproductive endocrinology and infertility services. State-of-the-art assisted reproductive technology procedures, endoscopy and microsurgery, and ovulation induction are offered to patients with a wide range of fertility problems. A strong collaboration with the Department of Urology exists such that surgical and medical treatments of the male partners are available, including epididymal and testicular aspiration combined with gamete micromanipulation, and ejaculation induction procedures for men with spinal cord injuries. A Couples Fertility Clinic offers high-quality comprehensive and coordinated care to both partners simultaneously by a reproductive endocrinologist and urologist. In addition, the division provides specialty clinics for patients with endometriosis, osteoporosis, and pediatric and adolescent gynecology concerns.

- University of Pennsylvania CoE

  The CoE clinical center, Penn Health for Women, is affiliated with the following Centers and Divisions offering infertility and

reproductive technology treatment:

The Penn Center for Reproductive Medicine and Surgery, the Delaware Valley's first infertility program, was begun in 1965. Since then, Penn has been a pioneer in the development of infertility treatments and is at the forefront of research in the field. The team of physicians, nurses, counselors and technicians help couples cope with the emotional, physical and technological aspects of achieving pregnancy. The University of Pennsylvania has a staff of 8 full time specialists in reproductive endocrinology and infertility. Services include:

— In-vitro fertilization, and other assisted reproductive technologies
— Ultrasonographic egg retrieval
— Gamete intrafallopian transfer (GIFT)
— Artificial insemination
— Cryopreservation of embryos
— Reconstructive surgery
— Laparoscopic surgery using lasers as well as more extensive procedures such as myomectomy or tuboplasty
— Treatment for ovulatory dysfunction and endometriosis
— Intracytoplasmic Sperm Injection (ICSI)
— Penn's sperm bank (includes freezing of sperm for people undergoing cancer treatment)
— Donor sperm program
— Epididymal or vas deferens sperm freezing

The Center for Fetal Diagnosis and Surgery provides therapy for children before or after birth. The multidisciplinary staff, including experts from The Children's Hospital of Philadelphia, offers comprehensive services, ranging from prenatal evaluation and diagnosis to treatment, including invasive fetal therapy and

open fetal surgery. Penn's collaboration with The Children's Hospital of Philadelphia enables high quality, state-of-the-art care to treat both patients —mother and child— together at one center.

Penn has several maternal fetal medicine specialists, a nurse practitioner, ultrasonographers and several nurses. Penn's high-risk specialists work hand in hand with newborn specialists, obstetrical anesthetists, the Perinatal Evaluation Center and the Antepartum Unit. In addition, The Children's Hospital of Philadelphia, located next door to the Hospital of the University of Pennsylvania, allows a partnership between their pediatric sub-specialists and pediatric surgical specialists.

Penn's Pregnancy Loss Evaluation Program, a leading research center in the field of infertility and miscarriage, provides a comprehensive evaluation by specialists for couples anxious to understand why loss has occurred and are hesitant to pursue another pregnancy until they understand more about the cause.

The Division of Reproductive Genetics provides comprehensive diagnostic services, medical management, counseling and all follow-up care for individuals and families who are affected with or concerned about genetic disorders. The Division of Reproductive Genetics offers a full range of prenatal tests, including those for neural tube defects or spina bifida and Down syndrome. Genetic counselors are available to discuss options and what raising a handicapped child will mean to the family.

✦ University of Puerto Rico CoE

The University of Puerto Rico CoE offers complete gynecological and obstetrical services at the CoE clinic. Basic screening and work up for infertility is done by a gynecologist for female

patients and independently by an urologist for males. If needed, there is a referral service for complete infertility and reproductive endocrinology services that includes in vitro fertilization.

- Wake Forest University CoE

  Infertility care is included in the Obstetrics and Gynecology services.

- University of Washington CoE

  The Fertility and Endocrine Center (FEC) is a specialized outpatient clinic of the University of Washington Medical Center. It is the clinical practice site of the Division of Reproductive Endocrinology and Infertility of the Department of Obstetrics and Gynecology of the School of Medicine. Dr. Dave Eschenbach, CoE Co-Director, is chair of the OB/GYN Department. CoE patients are referred to the FEC, as appropriate.

  The primary areas of practice are reproductive endocrinology and infertility, including assisted reproductive technologies. For infertile couples, the clinic focuses not only on the medical, but also the psychological and social needs of these couples. The Assisted Reproductive Technologies (ART) program at the FEC began in 1984 and is currently one of the leading programs nationwide both in overall pregnancy rates and the number of patients treated.

- University of Wisconsin CoE

  Infertility care for patients at the UW CoE Women's Health Clinic is provided through the UW Fertility Center. This center was established in 1974, offering the latest technology to assist couples experiencing fertility problems. The center was the first

in the state of Wisconsin and the fifth in the United States to offer IVF. It is staffed by fellowship trained reproductive endocrinologists and is registered with the Society of Assisted Reproductive Technology (SART).

Services offered include:

— evaluation and diagnosis of infertility
— evaluation and treatment of recurrent pregnancy loss
— endocrine problems of women such as hirsutism (excessive hair growth)
— pituitary tumors, menstrual irregularities, endometriosis, PMS and menopause.

In addition special expertise in the evaluation and surgical correction of congenital anomalies of the reproductive tract, microsurgery of the fallopian tubes and laser ablation of endometriosis is available.

Other services include:

— therapeutic donor insemination
— full service assisted reproductive technologies including IVF, GIFT, ZIFT, ICSI, assisted hatching, egg donor program, cryopreservation of embryos and sperm.

Complete evaluation of male infertility is provided by an andrologist and surgical procedures are performed by an urologist with subspecialty interest in infertility.

Professional Education

✦ University of California, Los Angeles CoE

The CoE sponsors an ongoing CME program for providers at UCLA, as well as a two-day program for outside clinicians.

"Controversies in Women's Health" included the topic of infertility. "Latest Advances in Infertility" was presented at Grand Rounds/Pathology by Dr. Alan DeCherney, CoE Deputy Director.

✦ University of California, San Francisco CoE

UCSF sponsors many CME conferences on women's health, including "Obstetrics and Gynecology Update: What Does the Evidence Tell Us?" This 3½ day course took an evidence-based approach to the discussion of new developments in obstetrics, including reproductive technologies and infertility.

Infertility training is an integral part of the UCSF Obstetrics and Gynecology residency program. CoE faculty cover infertility topics at Grand Rounds in many departments.

✦ Harvard Medical School CoE

Harvard's Women's Health and Psychiatry Grand Rounds at Massachusetts General Hospital included, "Depression Anxiety in Couples Presenting for In-vitro Fertilization." By Rajesh M. Parikh, M.D., Jaslok Hospital and Research Center, Bombay, India.

✦ University of Michigan Health System CoE

The Public Health Interdepartmental Concentration in Women's Health focuses on public health issues in reproductive health, from the broader perspective of women's health across the lifespan**.** ***Emerging Reproductive Technologies*** is one of the topics studied. The Annual Clinical Update in Obstetrics and Gynecology CME program offers topics related to reproductive health. ***New Insights in Polycystic Ovarian Syndrome*** is one recent topic reviewed. A monthly lecture series concerning

psychological issues surrounding pregnancy and loss is also available for physicians and nurses covering topics such as miscarriage, ectopic pregnancy, adoption, surrogacy, and infertility.

- University of Pennsylvania CoE

  CoE faculty members, Jerome Strauss, MD, CoE Center Director, and Gail Morrison, MD, CoE Professional Education Director, serve as members of the University of Pennsylvania Medical School curriculum committee, which includes the following training in infertility and reproductive treatment:

  The Medical Undergraduate curriculum at the University of Pennsylvania Medical School includes a four week elective in Reproductive Endocrinology & Infertility. The student participates in a busy clinical practice specializing in reproductive disorders. While the majority of time is spent in an office setting, ample time is available to observe diverse surgical procedures. In the office, the student is exposed to patients experiencing infertility and reproductive endocrine disorders. Diagnostic tests (post-coital examination, endometrial biopsy and vaginal ultrasound) and various therapies (ovulation induction and insemination) are observed on a daily basis. Patients presenting with amenorrhea, DUB, and menopausal complaints are also evaluated and treated. Surgical procedures include diagnostic laparoscopy, treatment of endometriosis, diagnosis and treatment of ectopic pregnancy, and myomectomy. The student also participates in an active in-vitro fertilization program.

  The Graduate Medical Education Department offers a 3-year fellowship program to train obstetrician-gynecologists in the subspecialty of reproductive endocrinology and infertility. Up to two fellows are taken into the program per year. The training

encompasses endocrine disorders, surgery of the reproductive tract and assisted reproductive technologies. Approximately one half of the fellowship training is devoted to basic or clinical research on relevant topic.

Training in reproductive biology and endocrinology is available for both predoctoral and postdoctoral fellows. Besides the research programs of each of the faculty, trainees participate in weekly journal clubs, a seminar series with visiting scientists, and periodic research retreats of the Center for Research on Reproduction and Women's Health. Trainees are also encouraged to present their research at national and international scientific meetings.

Predoctoral candidates may obtain their degrees from one of the many graduate programs administered by the Biomedical Graduate Studies program. Each of the training faculty is a member of one or more interdepartmental graduate groups offering degrees in fields such as Biochemistry, Cell Biology, Pharmacology, Pathology, Molecular Biology, etc.

The Center for Research on Reproduction and Women's Health conducts weekly seminars presented by local, national and international women's health researchers.

- Tulane and Xavier Universities CoE

  Reproductive Endocrinology is offered as a Women's Health Elective for fourth year medical students at the Tulane Medical School. The course curriculum was designed and is offered by TUXCOE faculty affiliates.

- Wake Forest University CoE

  The WHCOE is successfully integrating a women's health curriculum into the new medical school education, residency, and

fellowship programs through interactive case study activities and lectures. Included are case studies and lectures on infertility.

✦ University of Wisconsin CoE

The UW Fertility Center, in conjunction with the Department of Ob/Gyn, provides educational programs on a regular basis for professionals. Programs are conducted in collaboration with scientists from the UW campus involved in cutting edge research in infertility.

Research

✦ University of California, San Francisco CoE

The UCSF Center for Health and the Community received a grant of more than $11 million dollars from the National Institute of Child Health and Human Development to study infertility and the use of technologies in reproduction. The grant funds four UCSF studies over a five-year period. The researchers will study how couples decide whether to try assisted reproductive technologies (ARTs), or to continue treatment if the initial attempt fails, the psychological effects on the woman and the couple, the economic and social costs of the new technologies, and the medical outcomes for babies who are born as a result of infertility treatments.

In the UCSF Center for Reproductive Biology, research into the genetics of fertility has led to promising information identifying and characterizing genes required for human germ cell (sperm and oocyte) development. Positional cloning methods have been used to identify the DAZ gene on chromosome Y. Mutations of the DAZ gene result in variable phenotypes including severe oligospermia, the most common cause of male infertility and one of the most common reason for couples to report to infertility clinics.

Also see the NCIR under Harvard Medical School CoE on page 16.

- Harvard Medical School CoE

The Center for Women's Health of the Mind/Body Institute (Beth Israel Deaconess Medical Center [BIDMC]), directed by Alice Domar, Ph.D., is dedicated to clinical and basic research in the application of mind/body medicine to women's health. Recent clinical studies on the application of mind/body medicine to women's health have shown significant and therapeutic benefit in a non-invasive, cost-effective fashion for infertility, menopause, and breast cancer. The Center collaborates with the reproductive endocrinology department at Brigham and Women's Hospital (BWH) and Boston IVF.

National Centers for Infertility Research (BWH, Massachusetts General Hospital[MGH]) (NCIR) are the two NIH-supported centers that grew out of the congressional mandate for more research on female infertility. One Center is based at the MGH under the direction of William F. Crowley, Jr., M.D., which includes a component at BWH under the direction of Robert Barbieri, M.D., Chairman, Department of Obstetrics and Gynecology. Janet E. Hall, M.D., Co-chair, HMS CoE Research Committee, is a key investigator in this program. This Center brings together excellence in clinical investigation and the tools of molecular biology, to investigate the gonadal axis causing human infertility. This includes a three-step process of precisely defining normative physiology in an area, utilizing statistically normative databases to distinguish new pathophysiologic abnormalities, and integrating these approaches to devise rational therapies. The Center has used these experimental approaches to devise novel infertility treatments using gonadotropin releasing hormone (GnRH) and its analogues. Currently, the Center's focus is on the modulation of follicle stimulating hormone (FSH) secretion by GnRH, sex steroids, the inhibin-activin-follistatin axis, and

the new transcription factors regulating gonadotropin subunit biosynthesis.

The second NCIR is a consortium with the University of Pennsylvania and the University of California at San Francisco and includes established interactions with two of the already existing DHHS CoEs. Andrea Dunaif, M.D. was the former CoE Director and the former Associate Director of this NCIR. The research theme of the UPenn-BWH-UCSF NCIR is the pathophysiology and molecular-genetics of the polycystic ovary syndrome (PCOS). This is the most common endocrine disorder of premenopausal women, affecting about 7% of this population. PCOS is the leading cause of hormonally-related infertility and of menstrual disorders and is also a major risk factor for Type 2 diabetes and cardiovascular disease. This center has already made a number of important contributions to elucidating the phenotypic features of familial PCOS, the molecular basis of steroidogenic defects in PCOS, and the identification of candidate genes for this disorder (see University of Pennsylvania on page 20 for more information).

The Vincent Center for Reproductive Biology in the Department of Obstetrics and Gynecology at MGH, one of the CoE partners, examines a diverse spectrum of women's reproductive health issues, including infertility.

Clinical NIH funded studies at the Center for Reproductive Health and Menstrual Disorders (BIDMC) include: "Conventional Infertility Therapy vs. Fast Track to IVF," Richard H. Reindollar, Principal Investigator. Other active Center clinical research topics under investigation include: (1) outcomes analysis in assisted human reproduction and (2) long-term follow up of women with reduced ovarian reserve.

Researchers at Brigham and Women's Hospital, one of the CoE partners, have found a more precise way for clinicians to determine which patients are better suited for either traditional in vitro fertilization (IVF) or blastocyst transfer, a more advanced method of IVF. The study is published in the March 2000 issue of ***Fertility and Sterility***.

✦ Magee-Womens Hospital CoE

Dr. Sarah L. Berga, of the Magee-Womens Hospital (REI) is partly funded by Specialized Cooperative Centers Program in Reproduction Research. This collaboration between basic science faculty with an established track record, physician-scientists, and clinical faculty provides a rigorous and exciting environment for the training of physician-scientists. Magee-Womens Hospital Research Institute presently is involved in numerous government, grant and industry funded projects related to reproductive endocrinology. Sharon Hillier, Professor of Obstetrics, Gynecology and Reproductive Sciences and Center Director of the CoE; Julie DeLoia, Assistant Professor of Obstetrics/ Gynecology and Reproductive Sciences, the Research Director for the Magee-Womens Hospital CoE; and Sarah Berga are leading investigators. Dr. Hillier's research relates to infectious disease and the reproductive health of women. Her research has focused on environment of the vagina. Dr. DeLoia's research is postulating a new theory regarding immune cells in the uterus that could impact treatment options for women with unexplained infertility. Her concern is the 20% of infertile women for which there is no explanation for their infertility. The research suggests that in infertile women the normal process of recruiting and subduing the immune cells in the uterus acts differently. The question relates to what are the signaling compounds.

✦ University of Michigan Health Systems CoE

The Reproductive Endocrinology Division of the Department of Obstetrics and Gynecology is dedicated to performing research related to reproductive health with the goal of improving current knowledge and treatments of infertility and other reproductive health problems. Gary Smith, Ph.D. is exploring in vitro oocyte maturation and oocyte cryopreservation, and is also NIH funded to study the role of phosphatases in oocyte and sperm function. Dr. John Randolph is a Co-PI of the SWAN Perimenopause Study sponsored by the National Institute on Aging and the National Institute of Nursing Research. Dr. Steve Domino is NIH funded to study the role of oligosaccharides in the implantation process. Dr. Gregory Christman is funded by the NICHD to study gene therapy as a treatment of uterine leiomyomata and is Co-PI on a Michigan Life Sciences Grant to develop a novel method of vaccine delivery for HIV and HPV. The pathophysiology of endometriotic implants, as well as innovative treatments for endometriosis, are currently being studied by Dr. Dan Lebovic who heads the University of Michigan Endometriosis Center. Dr. Dana Ohl (Department of Urology) studies the effects of male infertility treatments on fertilization, implantation and pregnancy rates. His basic research laboratory utilizes animal models for spinal cord injury. Knowledge gained from this model is being rapidly translated into the clinical arena. Dr. Yolanda Smith, UMHS CoE Research Director, studies the effects of gonadal hormones on brain neurotransmitter systems with noninvasive PET and SPECT neuroimaging techniques.

✦ University of Pennsylvania CoE

The University of Pennsylvania Medical Center was awarded a $5.6 million grant from the National Institute for Child Health and Human Development (NICHD) for research on the causes of infertility and the development of new treatments. The five-year grant, received in 1997, funded the creation of the National Center for Research on Female Infertility, reinforcing Penn's historic commitment to the health of women and to the science of human reproduction. The focus of the National Center for Research on Female Infertility is on the clarification of the genetic basis of a condition known as polycystic ovary syndrome (PCOS), a disorder in which multiple cysts develop on the ovaries and ovulation rarely occurs. PCOS is one of the leading causes of female infertility and metabolic disease, affecting an estimated 10 percent of women of reproductive age. The multi-faceted research program uses state-of-the-art techniques in molecular genetics, molecular and cell biology, and rigorous clinical investigation to better understand and treat PCOS. Research efforts have been expanded in reproductive biology, reproductive genetics, and clinical research and treatment development. The Center serves as a national resource for the career development of young scientists electing to pursue research in high priority areas of infertility research.

Also see the NCIR under Harvard Medical School CoE on page 16.

Penn's Center for Research on Reproduction and Women's Health is directed by Dr. Jerome Strauss, III, M.D., Ph.D., who also serves as CoE Center Director. The Center, a biomedical research enterprise, is an international resource for infertility research, contraceptive development, education, and specialized patient care. It is composed of faculty from the departments of

Obstetrics and Gynecology, Pharmacology, Medicine, Cell and Developmental Biology, Genetics, Department of Clinical Studies (School of Veterinary Medicine), and Biology (School of Arts and Sciences). The Center has two major research aims:

— Increase the understanding of human reproduction as it relates to fertility regulation and the diagnosis and treatment of male and female infertility
— Promote the well-being of women through study of health issues specific to women.

Basic research activities of the Center are focused at the cellular and molecular levels in five principal areas:

— Implantation and Placentation
— Early Development
— Gametogenesis and Fertilization
— Endocrinology
— Molecular Genetics
— Gynecologic Cancers

Clinical research focuses on:

— Contraceptive and microbicide development
— Diagnosis and treatment of male and female infertility
— Polycystic ovary syndrome
— Premenstrual syndrome
— Ectopic pregnancy
— Pre-eclampsia
— Pre-term labor
— Fetal growth restriction
— Menopause and peri-menopause
— Vertical transmission of viral infections
— Ovarian cancer

✦ University of Wisconsin CoE

The UW Fertility Center works in collaboration with scientists from the UW campus, and is involved in cutting edge research in infertility. Jeffrey M. Jones, PhD, Andrology and ART Laboratory Director, maintains several collaborative research relations with other scientists on the University of Wisconsin-Madison campus. This enables the UW Fertility Center the opportunity to offer patients the latest emerging technologies as they are being developed. Under direction of Dr. Jones, the laboratories of the UW Fertility Center have consistently maintained pregnancy rates that are higher than the national averages reported by SART. The availability of new culture media has allowed growing embryos to the blastocyst stage of development at which embryos implant in the uterine lining (endometrium). Blastocysts are more efficient in implanting. Therefore, there is no need to transfer more than two blastocysts. The center has been growing embryos to the blastocyst stage for transfer in IVF since June of 1998. The center's ongoing pregnancy rate, in IVF cases where blastocysts have been transferred, is over 60%. Half of these pregnancies have been twin gestations. Currently, all patients that develop 8 embryos are eligible for blastocyst transfer.

In addition, several UW CoE affiliate faculty members have NIH funding for projects in fertility and reproductive health research. Some examples:

— Thaddeus Golos, PhD, is studying placental biology in the nonhuman primate model, with particular focus on the trophoblast, the primary functional placental cell at the maternal fetal interface.

— Ronald Magness, PhD, is exploring regulating factors in uterine and placental artery endothelium cells.

Leadership

✦ Magee-Womens Hospital CoE

The Magee-Womens Hospital Satellite Clinical Research Center (CRC) offers opportunities to faculty to conduct clinical research. This is the only federally funded facility of this type in the United States, i.e., the only satellite clinical research center with a focus on women's health. The MWH Satellite CRC is part of an extensive CRC network at the University of Pittsburgh School of Medicine. Because of this facility, pilot research projects for junior faculty can be underwritten. Junior faculty is further mentored in good clinical research practices via participation on the Satellite CRC Advisory Committee. This committee reviews all clinical investigations that are planning to use any CRC facility and includes an in-house statistical review.

The CoE is proud of the fact that Magee-Womens Hospital houses the only satellite Clinical Research Center devoted primarily to women's health. This facility receives federal funding from the National Center for Research Resources and provides a clinical research facility that provides infrastructure in the form of outpatient interview and examination rooms, a specimen-processing laboratory, and specialized gynecologic and other equipment for the conduct of research investigations. The bioinformatics support for clinical investigators including reproductive endocrinology is currently being expanded.

Magee-Womens Hospital's CoE Center Director, Sharon Hillier, is a consultant to the World Health Organization related to the reproductive health of women worldwide.

Outreach

- Magee-Womens Hospital CoE

  Magee-Womens Hospital (REI) provides clinical and education support to community physicians located in Ohio and north and east of Pittsburgh in Pennsylvania.

- University of Michigan Health Systems CoE

  The CoE in collaboration with the Complementary and Alternative Medicine Research Center and Borders Books and Music, sponsored a free lecture series on women's health with ***Taking Charge of Your Fertility*** as one lecture topic offered. The Reproductive Endocrinology faculty provides up-to-date information on available fertility treatments at local meetings of the national infertility support group, RESOLVE.

- University of Pennsylvania CoE

  Penn Health for Women provides a variety of counseling services for couples in their infertility programs, offering emotional support and outreach.

- Tulane and Xavier Universities CoE

  Infertility is one topic for which patient oriented health education brochures are available in all of the TUXCOE Women's Health Clinics.

- University of Wisconsin CoE

  The UW Fertility Center provides educational programs on a regular basis for the general public. Programs are conducted in collaboration with scientists from the UW campus involved in cutting edge research in infertility. (see "Research" section above)

National Centers of Excellence in Women's Health
September 2001

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University of California, San Francisco, San Francisco, CA
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Harvard University, Boston, MA
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University of Illinois at Chicago, Chicago, IL
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Indiana University School of Medicine, Indianapolis, IN
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University of Pennsylvania, PA
Phone: 215-573-3569 Internet: www.obgyn.upenn.edu/cewh/

University of Puerto Rico, San Juan, PR
Phone: 787-753-0090 Internet: www.rcm.upr.edu/2klwhc

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Phone: 877-588-5100 Internet: www.tulane.edu/~tuxcoe/NewWebsite/index.htm

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